# A NEW WESTERN ATLANTIC SPECIES OF CYMATIUM (GASTROPODA: CYMATIIDAE)

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ABSTRACT

Cymatium raderi, *a new species from the east coast of Honduras, Central America, and the West Indies, is described and comparison is made with* C. femorale *(Linné, 1758) and* C. praefemorale *(Maury, 1917).*

*Cymatium femorale* (Linné, 1758) was very briefly described in the 10th edition of the *Systema Naturae,* p. 749, and this description was repeated almost verbatim in the 12th edition in 1767, p. 1217. To supplement this two-line description, Linné referred to several figures in the books of his time. However, three of the figures he referred to – namely, Rumphius (1711), t. 26, fig. B; Argenville (1742), t. 13, fig. B; and Regenfuss (1758), t. 2, fig. 21 – appear to be referable to *Cymatium lotorium* (Linné, 1758). Linné corrected this error in his manuscript notes (Dodge, 1957). Linné's remaining four references correctly figure *C. femorale:* Grew (1681), t. 11 (should be t. 10, figs 7, 8, wrongly figured as a sinistral specimen); Buonanni (1681), 3, t. 290. Linné in a manuscript note designated the figure in Buonanni as "bene" (Dodge, 1957) (See our fig. 1); Lister, t. 941; and Gualtieri (1742), t. 50, fig. C. Linné (1767) added to the synonymy Seba (1758), t. 63, figs. 7, 8 and these two figures are excellent (See our fig. 2). Figs. 9, 10 on t. 63 of Seba appear to be juvenile *C. femorale. Lotorium lotor*

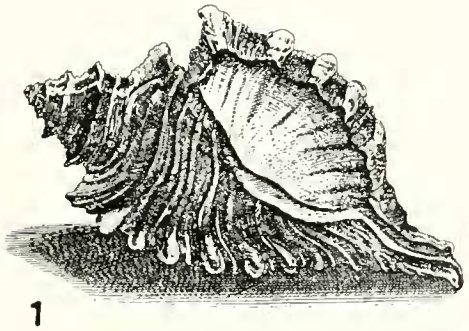

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FIG. 1. *Cymatium femorale* (Linné, 1758), taken from Buonanni (1681).

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FIG. 2. *Cymatium femorale* (Linné, 1758), taken from Seba (1758).

Montfort, 1810, is a junior synonym of *Cymatium femorale* Linné, 1758). Although Montfort referred to *Murex lotorium* Linné, 1758, Montfort's figure is *Cymatium femorale* (Linné, 1758).

The type of *C. femorale* is in the Linnean collection in London and conforms with the description and with the citations by Linné with the exceptions, as above stated, of Rumphius, Argenville and Regenfuss (Dodge, 1957). In his description Linné states "apertura edentula",


FIG. 3. *Cymatium femorale* (Linné, 1758), SDNHM 15664. Photograph by D. Gottleib.


FIG. 4. *Cymatium femorale* (Linné, 1758), SDNHM 15664. Photograph by D. Mulliner.

i.e. aperture without denticles. None of the figures referred to by Linné showed any denticles within the aperture. Figs. 3, 4 illustrate *C. femorale* (SDNHM 15664).

Clench and Turner (1957) placed *Septa triangularis* Perry, 1811, pl. 14, in the synonymy of *Cymatium femorale*, but the cited figure in Perry (1811) from the Southern Ocean appears to be a composite drawing of *C. lotorium* Linné, 1758, *C. femorale* Linné, 1758 and *C. perryi* Emerson and Old, 1963. For further discussion see Emerson and Old (1963).

*Cymatium praefemorale* (Maury, 1917) was described from a Tertiary fossil found at Rio Gurabo, Santo Domingo, West Indies. Figs. 5, 6 illustrate *C. praefemorale* (TU 1280).

L. J. Bibbey of San Diego, California, recently brought to our attention specimens of a *Cymatium* collected by fishermen in the Caribbean Sea off the east coast of Honduras, Central America, which bear a superficial resemblance to *C. femorale*. This new species has very obvious dentition within the aperture and in that respect resembles *C. praefemorale* (Maury, 1917). In the monograph by Clench and Turner (1957) on Cymatiidae, pl. 129, fig. 1, labelled *C. femorale* from Great Abaco, Bahama Islands, the figure appears to be a specimen of the new species and not *C. femorale* as described by Linné. Four lots are in the collection of the American Museum of Natural History. #182782, one specimen, (paratype) from Tobago Island, West Indies, collected by Sol Weiss of New York City. #205836 from Punta Potuca, Honduras, trawled from 18 to 27 m, one specimen, sent to the Museum by Helio Garcia. #107868, one specimen, from Dry Tortugas, Florida, collected by shrimpers, 1963. #205350, three specimens, from off Honduras, by fishermen, obtained from Jack Rader, via R. T. Abbott.

Differences in the general shape, rounding of the varices, less rugose sculpture and strong dentition distinguish this new species from both *C. femorale* and *C. praefemorale*.

*Institutional Abbreviations:* SDNHM (San



FIGS. 5, 6. *Cymatium praefemorale* (Maury, 1917) TU 1280. Photographs by A. Beu.

Diego Natural History Museum); AMNH (American Museum of Natural History); TU (Tulane University).

Family: *Cymatiidae* Iredale, 1913
Genus: *Cymatium* Röding, 1798


FIG. 7. *Cymatium raderi* n. sp., holotype, SDNHM 81627. Photograph by D. Gottleib.


FIG. 8. *Cymatium raderi* n. sp., holotype, SDNHM 81627. Photograph by D. Mulliner.

*Type Species: Murex femorale* Linné, 1758, by subsequent designation, Dall 1904, p. 133

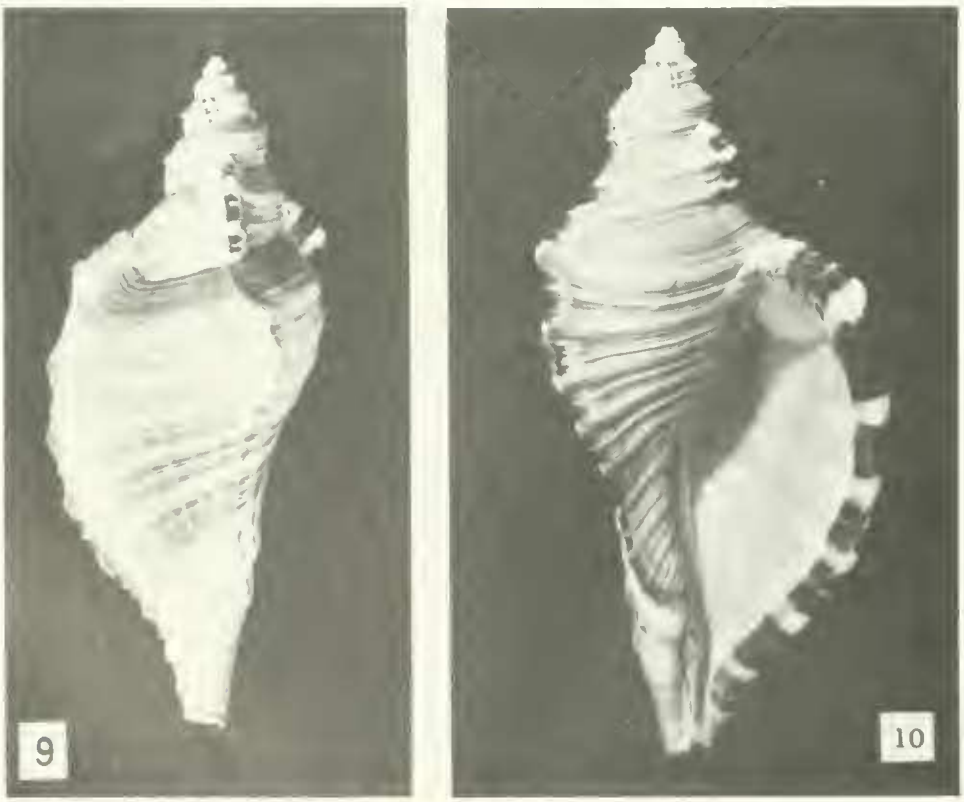
***Cymatium raderi*** *new* species
Figs. 7-12

*Description:* Length 152 mm by 88 mm wide; moderately strong with seven convex postnuclear whorls; suture distinct except where interrupted by the varices; protoconch eroded; first postnuclear whorl rounded; weak axial ribs begin on the second postnuclear whorl (12 per whorl are apparent up to the first varix which is on the fourth postnuclear whorl); spiral cords six on the first postnuclear whorl, increasing in number for each succeeding whorl; two of the spiral cords are stronger, one at the shoulder and one below the shoulder beginning on the third postnuclear whorl, increasing in strength on the fourth and fifth whorl and increasing to five in number on the body whorl; the cord on the shoulder gives a weakly angulate appear-

ance to the otherwise rounded whorls. One major cord and two to three weaker cords are present on the canal. The major cords and the remaining surface of the body whorl are covered with spiral threads. The shoulder contains only minor cords and spiral threads. Aperture elongate, oval, truncate posteriorly; canal open, tapering and recurved at termination. Inner lip strongly concave, very thin and adherent above; below the midpoint of the aperture the inner lip is slightly erect, with a dull pale-purple stain extending into the canal. Outer lip with four denticles, one within the truncate portion of the aperture. The remaining three denticles occur on the apertural side of the depressions between the spiral cords on the posterior portion of the aperture; the most anterior denticle is bifid. These denticles begin well away from the lip edge. The outer lip reflects the undulating character of the spiral sculpture; deep brownish purple coloring occurs in the depressions between the spiral cords within the aperture. Inside of aperture white. Ventral side of the expanded apertural varix is concave at the peristome and strongly stained with deep-brown between the six white spiral cords and extending to the rounded edge of the varix. These cords are white only on the ventral surface of the leading side of the varix. The shell has five rounded varices, the first on the fourth postnuclear whorl, the second on the body whorl opposite the one on the apertural side. The varices terminate posteriorly in a convex sloping plane from the suture. Axial sculpture consists of three nodes on the shoulder of the body whorl, the center node projecting most prominently, nodes very weakly developed or lacking on the cords below.

*Color:* Externally, the color is a warm reddish ochre, becoming richest on the receding side of the apertural varix.

*Type Material:* Holotype, 185 mm×90 mm (SDNHM 81627); Paratype A, 136 mm×59 mm (SDMNH 81628); Paratype B, 187 mm×87mm (AMNH 182782); L. J. Bibbey collection–Paratype C, 196 mm×87 mm; Jack Rader collection–Paratype D, 192 mm×87 mm; Jack Rader collection–Paratype E, 124 mm×69 mm.




FIGS. 9, 10. *Cymatium raderi* n. sp., paratype C, Bibbey collection. Photographs by D. Gottleib

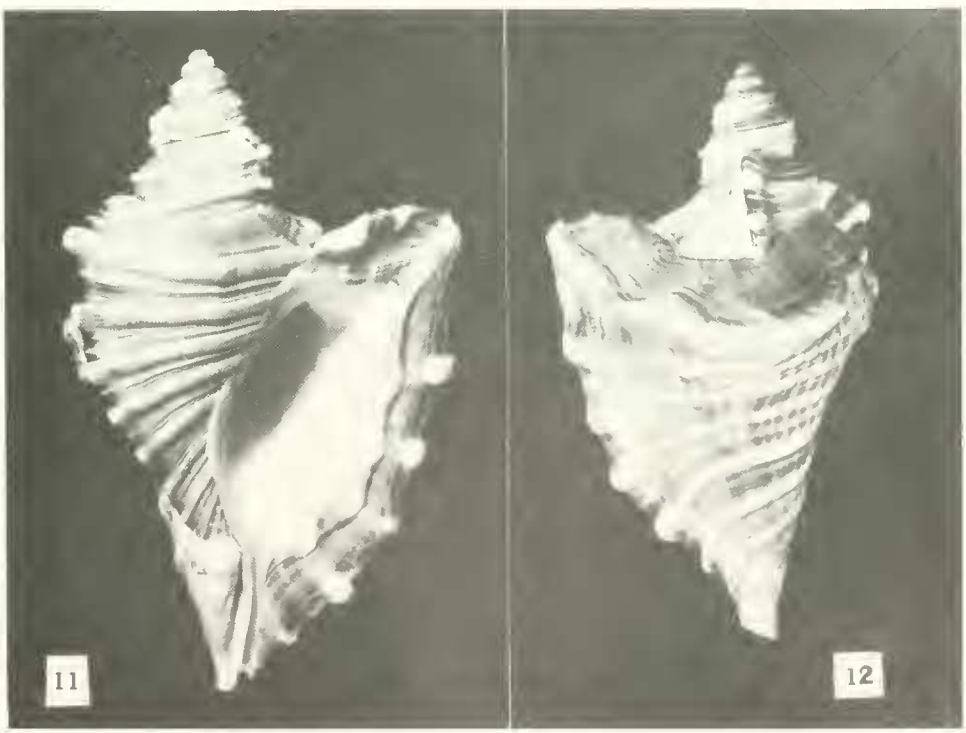
*Type Locality:* Collected by fishermen off the east coast of Honduras, Central America, Caribbean Sea. An additional specimen was discovered in the American Museum of Natural History no. 182782 from Tobago Island, West Indies.

*Etymology:* Named for the late Jack Rader, who first recognized the differences in this new species.

*Discussion:* Paratype C, figs. 9, 10 from the Bibbey collection is a slender, elongate specimen, light in weight, with an immature lip. Paratype D. figs, 11, 12, from the Rader collection has an extreme development of the central shoulder node changing into a broad tabulate projecting shelf. The apertural varix is also more extensively developed, and the shell is strong and heavy, with weak, bifid denticles within the aperture.

Comparison of the new species with *Cymatium femorale* shows differences in the shape and sculpture. *Cymatium raderi* does not have the more clearly defined trigonal shape of *C. femorale,* and the varices are rounded rather than pointed at the shoulder. The extension of the varix in *C. femorale* rises spinelike into a projection and slopes concavely to the suture. In comparison the varix of the new species is truncate most posteriorly and slopes convexly and anteriorly from the suture. The sculpture of *C. raderi* is much less rugose, the spiral cords are broad and rounded between moderate to weak depressions, and the intervarical areas are without prominent nodes. The spiral cords of *C. femorale* are raised between deep depressions to a greater degree than in *C. raderi;* this is especially emphasized on the varices where the stronger and heavier cords project into prominent nodes. These nodes are white, both on the leading edge and also on the receding edge of the varices. *C. raderi* has less prominent nodes that are white only on the leading edge of the varices. The shoulders of the whorls in *C. femorale* are angulate and they appear tabulate, while in *C. raderi* they are very weakly angulate. A prominent feature of *C. femorale* is the axially oriented nodes on the spiral cords which in *C. raderi* are weak to absent. There are no nodes or denticles within the aperture of *C. femorale,* while the aperture of *C. raderi* is strongly dentate.

Comparison of the new species with *C. praefe-*




FIGS. 11, 12. *Cymatium raderi* n. sp., paratype D, Rader collection. Photographs by D. Gottleib.

*morale* shows differences in the following characters: *C. praefemorale* has stronger cords and costae than *C. raderi*. Two to four rows of prominent axially oriented nodes similar to those in *C. femorale* appear on the body whorl between the varices. Within the aperture of *C. praefemorale* there are six strong swollen denticles (none of these are bifid as in the new species), beginning at the margin of the outer lip and extending well into the aperture. All denticles are of approximate equal size and extend from the anal trough anteriorly to the siphonal canal. *Cymatium praefemorale* also has numerous plicae that extend along the columella whereas *C. raderi* has only one or two plicae on the anterior portion of the columella. The entire surface of the seven specimens of *C. praefemorale* examined have easily visible raised axial striae. This character is decidedly more weakly developed in both *C. femorale* and the new species.

*C. praefemorale* further differs from the new species by its much smaller size (ranging from 61 mm to 92 mm), the stronger more numerous plicae on the columella and the ridged appearance of the surface due to the strong development of the growth striae.

In summary, the new species may be most readily distinguished by the following characters: the truncate downward-sloping termination of the varices, the dentate aperture, the weaker spiral cords and the lack of prominent intervarical axial nodes present on most specimens of *C. femorale* and *C. praefemorale*.

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## LITERATURE CITED

Argenville, A. J. D. d'. 1742 L' histoire naturelle..La Lithologie et la Conchyliologie...Paris. not seen. The work consulted was the Nouvelle Edition. 1757. La Conchyliologie. The plate number was 34, Fig. $A_3$.

Buonanni, F. 1681. Ricreatione dell' occhio e della mente nell' osservation' delle chiocciole. Rome.

Clench, W. J. and R. D. Turner. 1957. The Family Cymatiidae of the Western Atlantic. *Johnsonia* **3**(36):189–244. Pls. 110–135.

Dall, W. H. 1904. An historical and systematic review of the frog shells and tritons. *Smithsonian Misc. Coll.* **47**:114–144.

Dodge, H. 1957. Historical review of the molluscs of Linnaeus. Pt. 5. The Genus Murex of the Class Gastropoda. *Bull. Am. Mus. Not. Hist.* **113**(2):77–222.

Emerson, W. K. and W. E. Old, Jr. 1963. A New subgenus and species of *Cymatium* (Mollusca, Gastropoda). *Am. Mus. Novitates* **2137**:1–13, 6 figs.

Grew, N. 1681. Museum Regalis Societatis: or a description of the natural and artificial rarities belonging to the Royal Society and preserved at Gresham Colledge, etc. 2 pts. London.

Gualtieri, N. 1742. Index Testarum Conchyliorum quae adseruvanter in Museo Nicolai Gualtiere. Florence. 110 pls.

Iredale, T. 1913. The generic name to be used for *Murex tritonis* Linné. *The Nautilus* **27**(5):55–56.

Linné, C. von. 1758. Systema Naturae per regna tria naturae. Editio decima. Vol. 1. 824 pp.

———— 1767. *Systema Naturae*. Editio duodecima. Vol. 1, pt. 2, pp. 533–1327.

Lister, M. 1685-1692. Historia Conchyliorum. Londini (not seen).

Maury, C. J. 1917. Santo Domingo Type Sections and Fossils. Pt. 1. *Bull of Am. Paleo.* **5**(29):165–251, pls 3–39.

Montfort, D. de. 1810. Conchyliologie Systematique. vol. 2. 676 pp. Paris.

Regenfuss, F. M. 1758. *Auserlesne Schnecken Muscheln und andre Schaalthiere*...Copenhagen. (not seen).

Röding, P. F. 1798. *Museum Boltenianum*. Hamburg. 199 pp.

Rumphius, G. E. 1705. D'Amboinsche Rariteikamer. Amsterdam. (not seen).

Seba, A. 1758. *Locupletissimi Rerum Naturalium Thesauri Accurata Descriptio et Inconibus Artificiosissimis Expressio*. Vol. 3, 212 pp., 116 pls. Amsterdam.